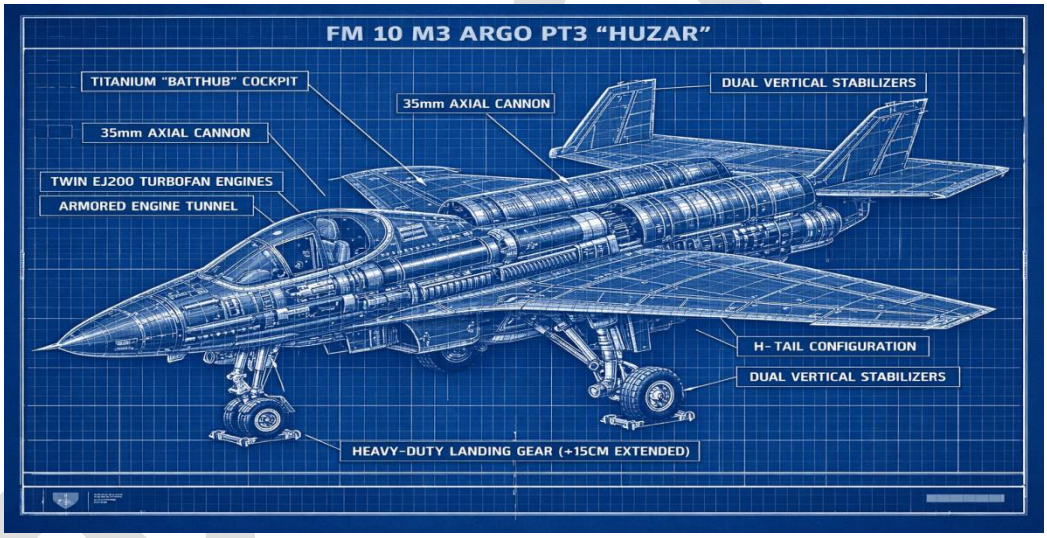
FM10 M3 Argo PT3 "Huzar" attack aircraft

Entry

This is the complete design of the FM 10 M3 Argo PT3 "Huzar." This 17-meter-long monster, designed as a "flying tank," combines indestructibility with the extreme maneuverability of swept wings.

1. Hull Architecture (17 meters of the "Armored Coffin")
The fuselage is wide and muscular, divided into three key safety zones:
Nose Section (0.0 – 5.0 m): Accommodates the axially mounted 35 mm revolver cannon. The nose landing gear is offset to the left to keep the barrel perfectly aligned with the aircraft (no drift when firing).
Center Wing (5.0–11.0 m): This section houses the Titanium Bathtub (pilot pod) and ammunition drum. Above this section are dorsal air intakes, protecting the engines from sand and ground fire.
Fire Section (11.0 – 17.0 m): Two EJ200 engines tucked inside the fuselage, separated by a titanium bulkhead. At the end is your 45° tailplane.



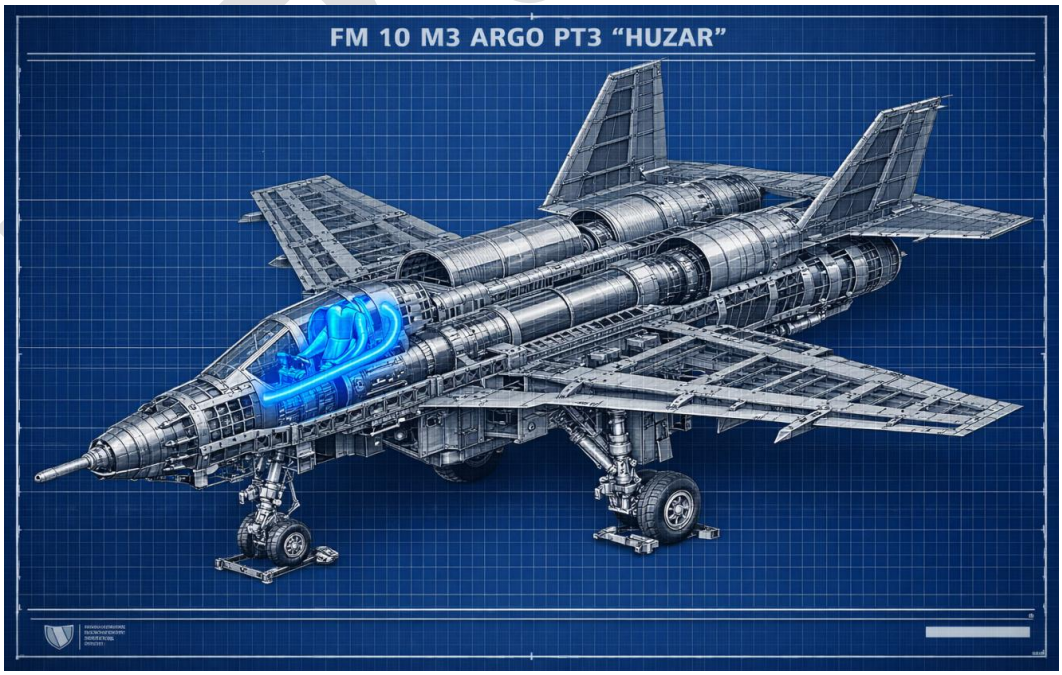
2. Wing Geometry (V-Arrangement - Negative Slope)
This is the most unique element of "Hussar":
Design: Forward-Swept Wings. Air flows to the root, preventing stalling at low speeds.
Girders: Made of forged titanium, anchored directly to the titanium pilot tub.
Advantage: Allows you to "hover" over the target and precisely aim the 35 mm gun at a speed of only 250 km/h.
3. Armor System (Titanium Citadel)
Bathtub: 1.5 tons of Ti-6Al-4V titanium surrounding the pilot. Bottom thickness is 50 mm (resistance to 23 mm cannons).
Engines: Concealed within armored tunnels. Even a direct hit to one engine prevents the other from being damaged thanks to a titanium separating bulkhead.
Tanks: Self-sealing, surrounded by a layer of Kevlar.

4. "Active Stiff-Extender" chassis (+15 cm)
In PT3 this system is reinforced to accommodate the enormous mass of armor:
Before landing: The legs extend by 150 mm and block the oil flow (become stiff).
Purpose: This protects the 35mm gun under the nose and the engine nozzles from hitting rocks or bumps when landing in an open field or on a damaged runway.
Table of Dimensions and Weights of PT3 "Huzar":
Parameter Value Description
Length 17,000 mm Optimal for gun-engine balance
Span 14,500 mm V wings (negative sweep)
Empty weight 11,500 kg Including 2.8 t of titanium armor
2x EJ200 propulsion inside the fuselage (without afterburners)
35 mm revolver gun, 450 kJ

Technical specifications

Here are the complete technical specifications for the FM 10 M3 Argo PT3 "Huzar" frame. At 17 meters long, we're building a machine that acts as a "flying shelter." The structure must withstand not only the G-forces of flight, but above all, the powerful recoil of the 35mm gun and the impact of enemy shells.

1. Spine and Materials (17m Structure)
The skeleton rests on three massive titanium longitudinal girders that run the entire length of the hull, creating a rigid platform for the gun and engines.
Titanium Ti-6Al-4V (Grade 5): 60% of the supporting structure (power frames and "bathtub").
300M Armored Steel: Active Stiff-Extender chassis attachment points (+15 cm).
BMI (High-Temp) Composite: Heat and fire resistant outer skin.



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2. Sectional Structure of the Skeleton
Section I: Nose and Artillery (0.0 m – 5.5 m)
This is the "fist" of the plane.
35mm Gun Mount: The gun is axially mounted. The barrel rests on three titanium recoil-dampening rings.
Canard: Armored mounting for the front wings, integrated with the gun mount.
Front Landing Gear: Moved 40 cm to the left to make room for the central barrel.

Section II: Citadel (Single-person cabin) (5.5 m – 8.5 m)
Here the skeleton turns into a Titanium Bathtub.
Construction: Monolithic titanium capsule with a thickness of 50 mm at the bottom.
Ergonomics: Pilot seat mounted on rails absorbing the energy of explosions under the fuselage.
Armored Glazing: The cabin frame is a forged titanium cage holding 7.5 cm of multi-layer glass.
Ammunition Drum: Located directly behind the pilot's back, surrounded by an additional layer of Kevlar.

Section III: Center Wing and Wings V (8.5 m – 12.5 m)
This is the strength "heart" of negative swept wings.
Main Spar: A giant titanium member connecting the V-wings to the fuselage. It must be extremely stiff to prevent wingtip vibration.
Dorsal Intakes: The skeleton "hump" on the back that guides air to the engines, bypassing the titanium tub.

Section IV: Armored Engine Tunnel (12.5 m – 17.0 m)
Two EJ200 engines: Tucked side by side inside an armored tunnel.
Fire Bulkhead: A 20mm titanium plate separating the engines from each other.
V-Tail 45°: Attachment of the butterfly tail at the ends of the two side tail spars.
3. Table of Weights and Dimensions of the PT3 Skeleton:
Frame Element Weight (kg) Material Role
Titanium Bathtub (1-person) 1,550 Titanium Ti-6Al-4V Pilot Protection (Citadel)
Wing spars V 1 200 Forged Titanium Negative skew stiffness
35mm Gun Stock 450 Steel/Titanium 50kN Recoil Damping
Armored Engine Tunnels 900 Titanium/Inconel Protection 2x EJ200
Active Landing Gear (+15 cm) 650 Steel 300M Field Takeoff/Landing

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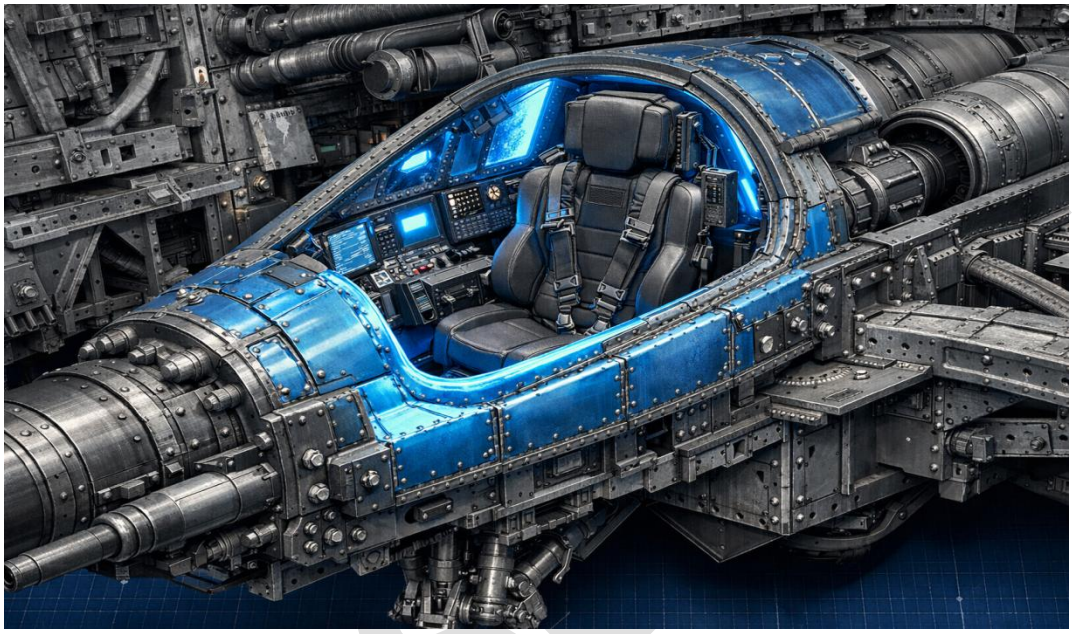
Titanium bathtub construction

The titanium tank structure for the FM 10 M3 Argo PT3 "Huzar" is the most crucial element of pilot survival. With a 17-meter fuselage and the powerful recoil of its 35mm cannon, this tank forms the "backbone" of the aircraft's entire forward section.

Here is the detailed structure of the titanium citadel:

1. Material Specifications and Thickness

The bathtub is not a uniform casting, but a welded and bolted structure made of Ti-6Al-4V titanium plates:
Bottom (Floor): 50mm solid titanium. Shaped into a deep "V" to deflect the shockwave of mine explosions or anti-aircraft shells under the aircraft.
Side walls: 25–35 mm. Protect against machine gun fire and rocket fragments.
Front bulkhead: 40 mm. This also serves as the mounting point for the 35 mm gun mount, absorbing a 50 kN recoil.
Rear bulkhead (fire bulkhead): 30 mm. Separates the cabin from the ammunition drum and fuel tanks.



2. Internal Architecture (Pilot Safety)
Spall Liner: The interior of the titanium tank is lined with a Kevlar/aramid layer. In the event of a hit that doesn't penetrate the titanium but causes it to spall inside, the fabric traps metal fragments, protecting the pilot.
Seat Cushioning: The 0-0 ejection seat is mounted on special rails with hydraulic shock absorbers. These reduce the impact of firing the gun and protect the spine during a hard landing (using your +15 cm chassis).
Hermeticity: The tank is completely sealed, allowing flight in contaminated environments (chemical/biological) thanks to the overpressure system.

3. Integration with the 17-meter Frame
The bathtub is a load-bearing element (so-called working structure):
The main titanium V wing spars (negative rake) are bolted to its sides.
Thanks to this, forces from the wings are transferred directly to the stiffest element of the aircraft, eliminating vibrations at supersonic speeds.

4. Titanium Bathtub Data Table:
Parameter Value Function
Gross weight 1 550 kg Ballast for 2x EJ200 in the tail
Bathtub length 2,400 mm Room for legs, seat and avionics
Ballistic resistance 23 mm bullets (API) Full protection against ZU-23-2

20-degree seat tilt angle Optimal for downward visibility

Cabin

In the 17-meter FM 10 M3 Argo PT3 "Huzar," the cabin is not just a workplace, but a "command center within the bunker." We must reconcile extreme titanium armor (50 mm) with the visibility necessary to precisely destroy tanks with a 35 mm gun.

Here is the detailed spatial architecture and ergonomics design:

1. Spatial Architecture (Interior of the "Bathtub")
High-Visibility Capsule: Even though the pilot sits in a titanium tub, his position is elevated relative to the line of the 35mm cannon.
Cabin width: 950 mm (wider than PT1/PT2 fighters). This allows for freedom of movement while wearing a heavy G-suit and makes it easier to access the side panels while wearing thick gloves.
Section length: 2,600 mm. The legroom is integrated with the ammunition feed rails running under the floor.

2. Seat Ergonomics and Visibility
0-0 Ejection Seat (Vertical): In the "Hussar" the seat is positioned almost vertically (angle 15-18°).
Why? In low-level flight (30-50 meters above the ground), the pilot must look primarily down and forward, not up. The vertical position reduces neck strain from constantly scanning for targets on the ground.
Deep-Look Glazing: The fairing extends very low on the sides, which, combined with the canards, allows for the viewing of targets almost directly below the nose of the aircraft.

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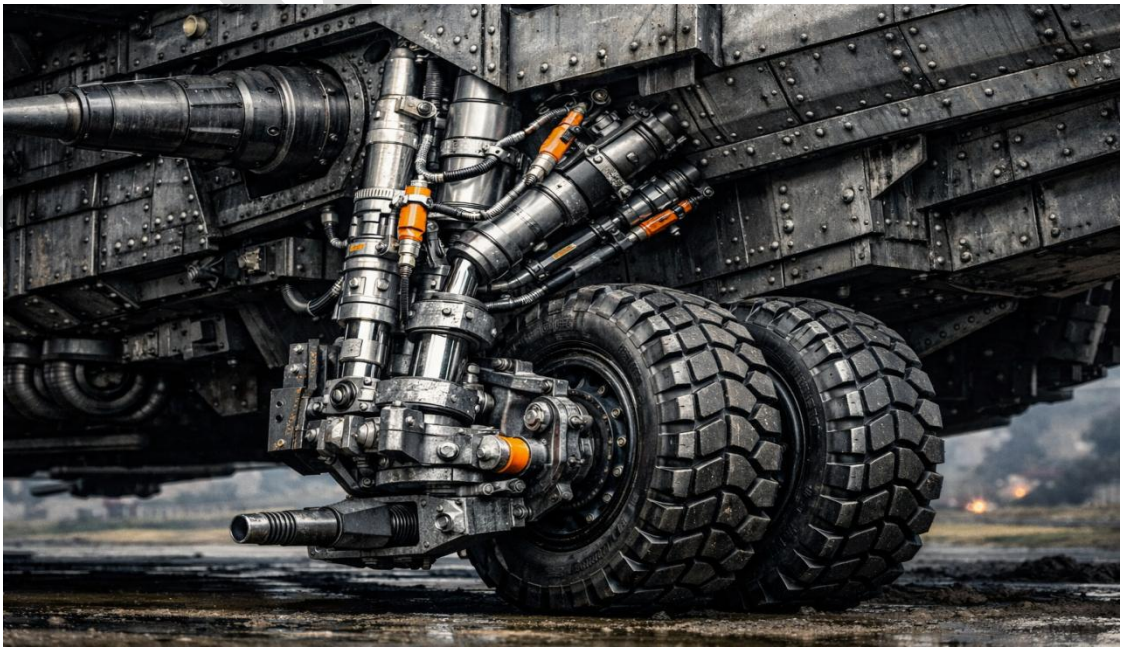
3. Interface and Control (HMI)
Armored Glass Cockpit: Three main screens (10 inches each) with a reinforced structure, resistant to shocks generated by a 35 mm gun (50 kN recoil).
Left Screen: EJ200 engine status and fuel system.
Center Screen: Digital battlefield map and gun sight.
Right Screen: Missile Warning Systems (RWR) and weapon status.
HOTAS (Rugged Version): The stick and throttle are heavier than those in a fighter jet. The pilot must feel the rudders' resistance, which prevents sudden movements when flying in turbulence close to the ground.

4. Virtual Floor System (See-Through Armor)
Because the titanium tub obscures the view directly below, the Hussar is equipped with a high-resolution camera system. The image is projected onto the pilot's helmet-mounted device (HMD), making the titanium floor "transparent" when targeting tanks.
PT3 Ergonomics Table:
Parameter Value Benefit
Seat tilt angle 18° Optimal aiming with the 35 mm gun
200 mm headroom. Space for a massive aiming helmet.
35mm Titanium Side Armor Protection Safety against side attacks
75 mm armored glass (layered) Resistance to ground fire

Technical development of the proprietary chassis system

Here's the full technical overview of the proprietary Active Stiff-Extender (+15cm) landing gear system for the 17-meter-long FM 10 M3 Argo PT3 "Huzar" monster. With a takeoff weight approaching 18 tons and a massive 35mm cannon in the nose, the landing gear must be more durable than that of any fighter.



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1. Architecture and Layout (Geometry 17 m)
Due to the gun being mounted centrally in the hull axis, the chassis layout is asymmetric:
Nose Gear: Offset 450mm to the left of the fore/aft axis. Equipped with a powerful deflector (shield) that sheds rocks and mud to the sides, protecting the air intakes on the nose.
Main Gear: Mounted on titanium power frames (W-16/17) at 11.8 meters from the nose. Wide track (approx. 4.5 m) ensures stability on uneven terrain (meadows, dirt roads).

2. Mechanizm „Active Stiff-Extender” (+150 mm)
This is the heart of the system, based on a two-stage hydraulic actuator:
Deployment Phase: At 10 m above the ground, the landing computer forces oil to flow into the auxiliary actuator chamber, extending the legs by 15 cm.
Pre-STIFF Phase: 0.5 seconds before touchdown, control valves block oil return. The landing gear becomes "stiff," absorbing the impact energy into a massive shock absorber stroke, instead of allowing the fuselage to "sit down."
Purpose: This allows the 35mm gun and 45° tail to have safe clearance even when landing at a high angle of attack (High AoA) on soft ground.

3. Material Specifications and Wheels
Material: Forged 300M high alloy steel (strength 1900-2100 MPa).
Main wheels: Tandem-Bogie arrangement (two wheels on each main leg, 4 wheels in total at the rear).
Tires: Low-pressure, wide "Tundra" tires allow operation in mud and sand without sinking.

4. PT3 Chassis Technical Data Table:
Parameter Value Technical description
Actuator type: Telescopic, two-chamber Active System +150 mm
4500 PSI High-pressure hydraulic pressure for lightning-fast response
Impact resistance 4.5 m/s descent speed Hard touchdown resistance
Weight of the complete system 780 kg Reinforced for titanium armor
Carbon-ceramic braking system Maximum braking power on short lanes

Since this is the most important thing, we are making a final, armored version of "Heart of a Hussar":

1. Titanium Bathtub (Life Capsule)
This isn't just any ordinary housing. It's a monolith made of Ti-6Al-4V titanium:
"V-Shape" Floor (50mm): A special profile under the floor. If a mine or rocket detonates under the aircraft, the "V" shape disperses the shock wave laterally rather than allowing it to rip through the cabin.
Multi-layered: The titanium is lined internally with an aramid liner (Spall Liner). Even if a 23mm bullet hits the titanium hard enough to deform inward, the aramid will trap the fragments so they don't injure the pilot.

2. Ammunition Drum Armor (Ammunition Citadel)
35mm shells are small bombs. Hitting an unarmed drum means the end of the plane.
Location: Located directly behind the pilot, but separated by a 30mm armored bulkhead.

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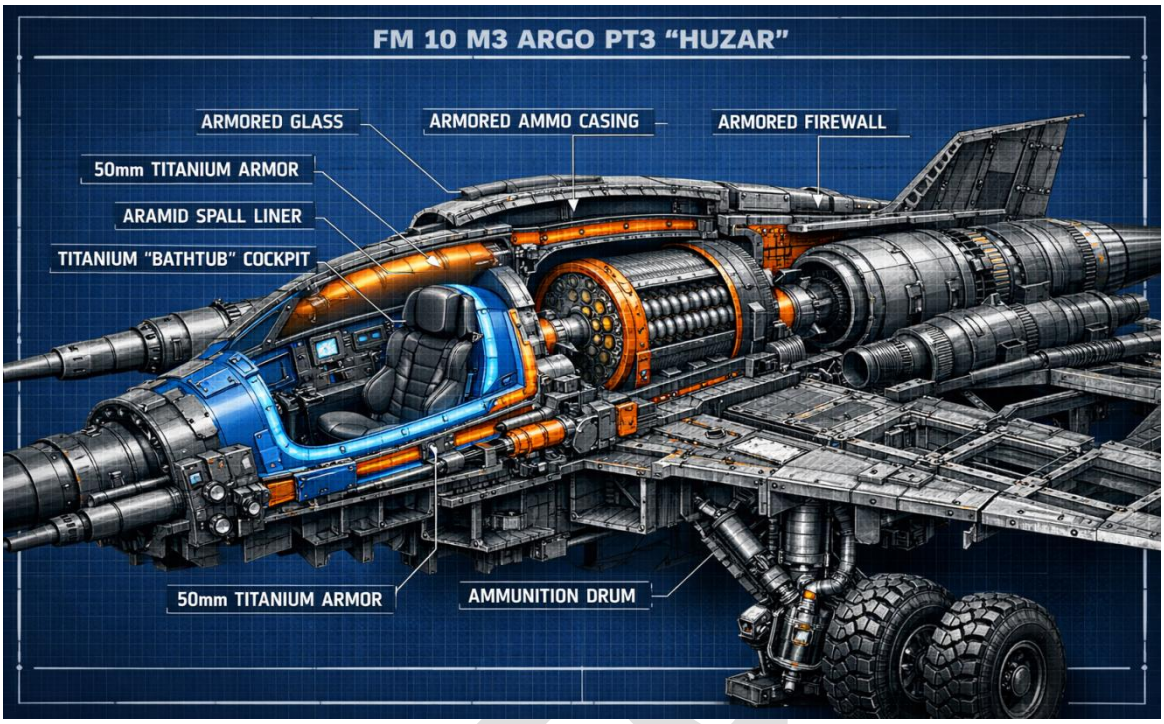
Blow-out Panels System: We mount safety panels on the back, above the drum. If the ammunition is accidentally hit and explodes, the energy of the blast is directed upwards into the sky, not into the cockpit or the engines.



3. Armored Glazing (75 mm Technology)
Composition: Sandwich of silicate glass, polycarbonate and ceramic layer.
Durability: Must withstand a burst from a large-caliber machine gun (12.7 mm) at a distance of 100 meters.
Visibility: We will use anti-reflective coatings so that when the sun is low over Poznań or Chorzów, the pilot can see the targets and not the reflections of his own clocks.
"Huzar" PT3 Safety Table:
Zone Material Thickness Protection against:
Bottom of the cabin Titan (V-shape) 50 mm Explosives under the fuselage, ZU-2
30mm Titanium Cabin Sides Side Fire (Rifles)
35mm Titanium + Kevlar 25mm Ammo Chain Explosion Magazine
Windshield Multi-Layered 75mm Direct Frontal Fire

Avionics

In the FM 10 M3 Argo PT3 "Huzar," the avionics must be as armored as the fuselage itself. At 17 meters long and flying at an altitude of 15-30 meters above the ground, the pilot doesn't have time to stare at hundreds of switches. The Fly-by-Wire system must work in conjunction with Artificial Intelligence Targeting.

Here is the avionics design for your 1-man "Armored Coffin":

1. Through Armor Visibility System (Virtual Floor)

Because the titanium bathtub obscures the view down to the ground, the Hussar has a system of 6 thermal imaging cameras placed around the nose and wings of the V.
HMD (Helmet Mounted Display): Camera images are projected directly onto the pilot's helmet visor. Looking down, the pilot sees enemy tanks as if the titanium floor were made of glass.

2. Pancerny Glass Cockpit (Rugged Avionics)
Instead of delicate screens, we use a monolithic LAD (Large Area Display) panel with a diagonal of 24 inches, mounted in a magnesium frame with shock absorbers.
Shock resistance: The system must function without disruption when a 35 mm gun is hit with a force of 50 kN just below the seat.
"Warrior" Interface: Only key data is displayed on the screen: flight path vector, 35mm ammunition load and distance to the nearest threat (MANPADS).

3. Mission Computer "Huzar-1"
This is the brain of the plane that integrates everything:
Auto-Targeting: The system automatically recognizes the silhouettes of enemy vehicles and marks them in red. The pilot simply needs to confirm the target and press the trigger.
Terrain Following (TF): The dorsal radar scans the terrain ahead of the aircraft. If the pilot misses a target, the Fly-by-Wire system automatically pulls the 17-meter fuselage over obstacles (trees, power lines).

4. Survival System (Electronic Warfare)
MAWS (Missile Approach Warning System): UV sensors detect ground-launched missiles. The system automatically deploys flares and dipoles without waiting for pilot input.
LWR (Laser Warning Receiver): Warns when an enemy tank tries to measure the distance to the "Hussar" with a laser.
PT3 Avionics Component Table:
Item Function Advantage in PT3
Skylord Helmet Eye Aiming Shoot where you look
AESA radar Target detection Sees through smoke and fog
Black Box Rugged Data Logger Survives Hull Destruction
Link-16 Cooperation with the Military You see what the tanks on the ground see

Tail section

The tail section of the FM 10 M3 Argo PT3 "Huzar" is a technological fortress. At 17 meters long and powered by two powerful EJ200 engines, the rear of the aircraft must not only withstand extreme temperatures but also protect the propulsion system from ground-side damage.

Here is a detailed technological description of the tail section:

1. Armored Engine Tunnel (Internal Twin-Vault)
Unlike fighter jets, here the engines are not just "inserted" into the fuselage - they are barricaded within it.

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Titanium Firewall: A 20mm titanium plate runs between the engines. If one engine is hit and catches fire or its blades explode, the firewall protects the adjacent vessel, allowing it to escape the battlefield on a single engine.
Belly Shield: The underside of the tail section is lined with titanium-ceramic plates. These protect the engine assemblies and fuel lines from machine gun fire when the aircraft flies directly over the enemy.

2. Tail Arrangement (H-Tail / Dual Tail)
We abandoned the butterfly system in favor of the H-system, which is unrivaled in an assault aircraft:
Thermal Shields: Two massive vertical stabilizers are positioned outside the engine nozzles. They act as mechanical screens – an anti-aircraft missile approaching from the side "cannot see" the hot exhaust gases because they are obscured by the cold stabilizer plates.
Duplicate Controls: Each of the two rudders and elevators has separate hydraulic actuators guided by different paths in the fuselage.

3. Thermal Signature Management (Cooling Bypass)
Air Mixers: Air drawn from the ridge intakes doesn't all go to the engine. Some air flows around the engine inside the armored tunnel, cooling it, and then mixes with the hot exhaust gases just before the exhaust nozzle.
Effect: The exhaust gas temperature drops by about 30%, which makes it drastically more difficult for simple Stinger-type missiles to target the Hussar.

4. Tail Section Technology Table:
Component Material Function
Inconel 718 Nozzle Housing Resistant to afterburner temperatures and gas corrosion
Forged Titanium Tail Spar Stability of the 17-meter fuselage spar
Halon/CO2 (Dual) Fire Extinguishing System Automatic fire suppression in the engine compartment
Gas Outlets Rectangular Shape IR Suppression

Tail arrangement in FM 10 M3 Argo PT3 "Huzar"

The FM 10 M3 Argo PT3 "Huzar" tail arrangement is a departure from the lightweight butterfly arrangement in favor of an armored H-array (twin vertical tail). At 17 meters long and with two internal engines, this tail acts as a "thermal shield" and stabilizer for the powerful recoil of the 35mm cannon.

Here is a detailed technical description:

1. Geometry and Shape (H-Tail Layout)
The tail resembles a wide "H." It consists of a powerful horizontal stabilizer with two vertical fins mounted at its ends.
Horizontal Stabilizer (Width): 5,800 mm. This is extra wide to position the vertical stabilizers out of the hot gas flow from the two EJ200 engines.
Vertical Stabilizers (Height): 2,200 mm each. They are straight, with a thick profile, allowing the steering actuators to be hidden inside.

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Trapezoidal shape: The leading edges have a chamfer of approximately 35°, which prevents wave drag at cruising speeds (approx. 800 km/h).

2. Thermal Shielding (IR Shielding) function
This is the most important innovation of this tail:
Side curtain: The two vertical stabilizers are positioned so that when viewed from the side, they completely obscure the engine nozzles.
Effect: An anti-aircraft missile (e.g., Stinger or Igla) fired from the side doesn't see the hottest point of the aircraft. The stabilizers are cooled by the airflow, so their heat signature is minimal.

3. Construction and Armor
The tail must withstand not only vibrations but also direct hits:
Tail Main Spar: A massive forged titanium beam connecting both vertical stabilizers to the fuselage.
Leading Edges: Made of 300M armored steel or 15mm thick titanium to prevent shrapnel impacts from damaging aerodynamics.
Dual Rudders: Each of the two vertical rudders and the two horizontal elevators has independent hydraulic lines. Even with half of its tail severed, the Hussar retains controllability.

4. PT3 Tail Dimension Table:
Element Dimension / Angle Material
Horizontal span 5.8 m Titanium / Composite BMI
Vertical height 2.2 m Titanium / Armored steel
Stabilizer Angle 90° (Vertical) Maximum Course Stability
Control area 4.2 m² (total) Enormous maneuvering power
Gross tail weight 680 kg Reinforced "H" structure

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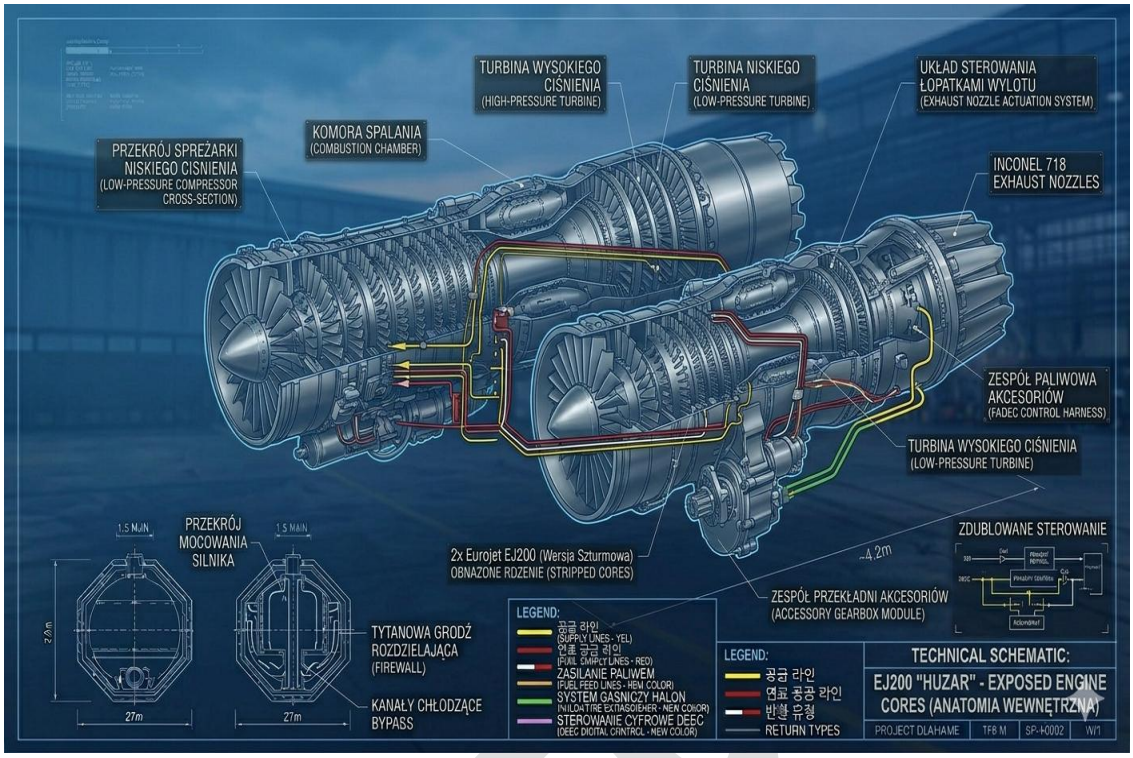
Drive

In the 17-meter-long FM 10 M3 Argo PT3 "Huzar" project, the propulsion system must be not only powerful but above all resistant to the "dirty" conditions of the battlefield. We chose a twin-engine system, housed within an armored hull.

Here is the target drive and the best possible replacement:

1. Target Drive: 2x Eurojet EJ200 (Attack Version)
This is the same engine that we have in the PT1 and PT2 fighters, which ensures full logistical unification.
Characteristics: In the "Hussar," we're doing away with afterburners. We're shortening the engine, saving weight, and drastically reducing its heat footprint (making it harder to hit with a missile).
Combined thrust (without afterburners): 120 kN (2x 60 kN). That's enough to lift an 18-ton armored colossus off a short, grassy runway.

Advantage: Lightning-fast throttle response. Crucial when the pilot suddenly has to "pull" the 17-meter fuselage over an obstacle after a burst from the 35mm cannon.



2. Best Replacement: 2x General Electric TF34 (Upgraded Version)
If for some reason the EJ200 were unavailable, we would choose the engine that made the A-10 a legend, but in its latest version.
Type: High bypass turbofan.
Total thrust: 82 kN. Less than the EJ200, but this engine is optimized for subsonic flight.
The "Silent Killer" Advantage: The TF34 is incredibly quiet and has very cold exhaust. A "Hussar" with these engines would be almost inaudible from the ground until it opened fire with its 35mm cannon.
Economy: Uses 30% less fuel than the EJ200, allowing the Hussar to cruise over the battlefield for 4-5 hours.
PT3 Drive Comparison:
Parameter 2x Eurojet EJ200 (Our choice) 2x GE TF34 (Replacement)
Total thrust 120 kN (Power) 82 kN (Economy)
Motor Diameter 740 mm (Slim) 1200 mm (Wide)
Drive weight approx. 2000 kg approx. 2900 kg
Parts availability Identical to PT1/PT2 Separate logistics line
Why is the EJ200 a winner for the Polish company?
We're sticking with the EJ200 because, at 17 meters long and with heavy titanium armor, we need excess power, not just economy. Additionally, the EJ200's smaller diameter allows for thicker armor around the engine tunnels inside the tail.

Here is the full technical description of the negative swept wings

Here's the full technical specification for the V-Forward wings of the 17-meter FM 10 M3 Argo PT3 "Huzar." This is the most advanced and risky design element, providing a unique advantage in close-to-ground combat in an armored coffin-type attack aircraft.

1. Geometry and Dimensions (17 m Structure)
The wings are mounted in the middle of the fuselage (at approximately 9 meters), which allows for perfect balance with the engines in the tail.
Span: 14,500 mm.
Negative sweep angle: -25 degrees. The wingtips are physically closer to the nose than the wing root.
Profile: Thick, high-lift (Supercritical), with a large chord at the root (4.8 m), allowing for the storage of huge titanium girders and fuel.

Engineering Challenge 2: Aeroelastic Divergence
In classic wings, the airflow straightens the structure. In a negative cant, the air "twists" the tips upward, which can break them off.
Solution: Titanium Monoblock. The wing root is integrated with the titanium pilot tub. The spars are made of variable-section titanium, and the carbon composite skin is layered (anisotropic) to mechanically resist torsion.
Active Damping: Fly-by-Wire system monitors tip vibrations and corrects them with real-time micro-movements of the front flaps.

3. Combat Application (Why "V"?)
Incredible Agility: V-wings allow for complete control at speeds of just 220-250 km/h. The Hussar can literally circle its target, aiming its 35mm gun like a helicopter.
Stall-Free: Air flows into the fuselage, not outward. This ensures that the ailerons (controls) always function, even when the aircraft loses lift. This is crucial when the pilot suddenly needs to avoid a missile just above the forest.

4. Armament and Mechanization
Despite their complex shape, the V wings are a "hanger" for Polish firepower:
Hardpoints: 5 under each wing + 1 central.
Mechanization: Full-length leading edge flaps (slats) and trailing edge elevons, optimized for subsonic flight (Mach 0.7–0.8).

5. Wing Technical Data Table:
Parameter Value Description
Max Load +9.0 G / -3.5 G Structural Strength at Full Armor
Fuel Capacity 2,000 Liters Self-sealing tanks inside the girders
Girder Material Titanium Ti-6Al-4V Main attachment points to the bathtub
Stall speed (V-min) 210 km/h Allows landing on very short distances

Fuel system

In the FM 10 M3 Argo PT3 "Huzar," the fuel system isn't just a tank—it's an armored survival network. At 17 meters long and powered by two EJ200

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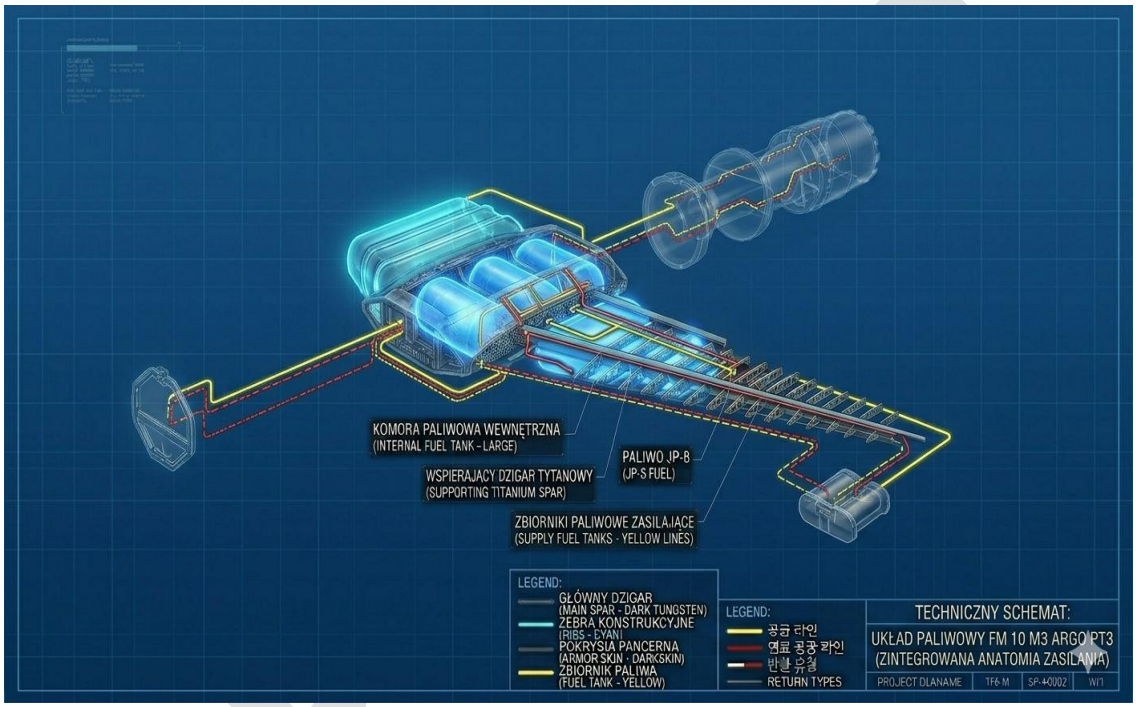
engines, the fuel must be protected just as much as the pilot, because any hole in the tank is a death sentence.

Here is the full technical description of the Self-Heal Survivor system:

1. Tank Arrangement (Mass Balance)
We concentrate the fuel in the thickest, central part of the 17-meter hull to protect it with armor:
Central Tank (C1): A gigantic, armored box behind the pilot's cabin (approx. 2800 L).
Wing Tanks (W1/W2): Inside thick, negatively sloped wing bases (totalling approx. 2000 L).
Total capacity: approx. 4800 liters (approx. 3800 kg of fuel).



2. Self-Sealing Technology
This is the most important function for the "armored coffin":
Multi-Layer Rubber: The tanks are lined with a layer of natural rubber. When penetrated by a bullet, the propellant reacts with the rubber, which swells in a fraction of a second, physically sealing the hole.
Kevlar Jacket: The entire tank is wrapped in a Kevlar mat that prevents shrapnel from tearing the tank apart.

3. Survival Architecture (Redundancy)
Independent fuel lines: Each of the EJ200's two engines has its own separate fuel line, running on opposite sides of the fuselage. Even if one side of the aircraft is damaged, the other engine continues to operate.
OBIGGS System: We fill the empty space in the tanks with nitrogen (generated on board). This ensures there's no oxygen in the tank – the fuel won't explode, even if an incendiary projectile is dropped into it.

4. Numbers and Efficiency (No Math)

Range: approx. 1200 km (allows for long "hovering" over the battlefield).
Refueling time: approx. 6 minutes (NATO standard high pressure).
Weight of the protection system: approx. 350 kg (armor and sealing rubbers only).
PT3 Fuel System Table:
Parameter Specification Function in "Huzar"
Tank type: Self-sealing Return to base after shooting
Explosion Protection Nitrogen System (OBIGGS) No fire on impact
Number of pumps 4 main + 2 emergency Power supply reliability 2x EJ200
Central location (behind the cabin) Titanium tub protection

Fuel control system

In the FM 10 M3 Argo PT3 "Huzar," the Fuel Management System (FMS) is no ordinary onboard computer—it's a "Digital Balancer." At 17 meters long, with two tail engines and a powerful 35 mm cannon at the front, any change in fuel mass drastically alters the behavior of this "armored coffin."

Here's how your system manages kerosene in "Huzar":

1. Active Ballast (Recoil and Weight Compensation)
The 35mm gun kicks with a force of 50 kN, and the EJ200 engines weigh over 2 tons.
Balancing: The system automatically transfers fuel between the wing and center tanks to ensure the Center of Gravity (CoG) is always perfectly above the wing V spar.
Ammunition Compensation: As you fire 300 heavy 35mm rounds from the nose, the system instantly shifts fuel forward to prevent the aircraft from suddenly becoming "tail heavy."

2. Combat-Flow Mode (Survival after being hit)
This is a unique feature for the PT3. If the sensors detect a sudden drop in pressure (a hole in the tank):
Section Isolation: The system isolates the damaged tank in a split second using pyrotechnic valves. Fuel from the remaining tanks is redirected to the healthy engine.
Cross-Feed: Even if the left side of the aircraft is mangled, the system allows both EJ200 engines to drink fuel from the single, surviving tank on the right side.

3. Heat-Sink Management
The stormtrooper doesn't have large radiators because they would get shot off.
Fuel as Coolant: All fuel circulates in a loop through heat exchangers, picking up heat from the electronics and hydraulics before entering the engine.
Advantage: This allows the Hussar to emit less heat outwards (a more difficult target for thermal rockets), and the heated fuel burns more efficiently in the EJ200.

4. Control Parameters (Numbers without Math)
Function Action Benefit
Pumping speed 500 kg/min. Instant balance change.
Number of sensors: 32 (ultrasonic) Precise reading in every acrobatic maneuver
Gravity Emergency Mode The EJ200 engine will receive fuel even without electricity
Power supply Duplicate pumps Resistance to electrical failure

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Here is the full technical description of the intake system:

The air intakes on the FM 10 M3 Argo PT3 "Huzar" are one of the most critical design elements. At 17 meters long and flying close to the ground, they must do more than just "feed air"—they must also protect the EJ200 engines from foul air (FOD) ingestion and direct fire.

1. Dorsal Intakes
Unlike the PT1/PT2 fighters, the Huszar's intakes were moved to the upper part of the fuselage, just behind the pilot's cockpit.
Fuselage cover: When flying at low altitude (15–50 m), the lower part of the aircraft (armored tub) covers the inlets from missiles fired from the ground.
Protection from debris: High intake placement ensures that when taking off from mud or sand using your +15cm landing gear, the engines do not inhale stones and dust kicked up by the front wheel.

2. S-Duct Geometry (Protection Bend)
The intake channels are S-shaped along the vertical axis.
Visual Interlock: The compressor blades of the EJ200 engines are completely hidden behind the duct bend. If a projectile enters the intake, it will strike the armored duct wall rather than destroy the engine rotor.
Centrifugal Separator: Drainage slots are located at the bottom of the first "S" bend. Centrifugal force ejects water (rain) and heavier sand particles before they enter the combustion chamber.

3. Armor and Intake Systems
The intakes in the "Hussar" must be literally "armored":
Intake Lips: Made of 15mm thick forged titanium, they are bird strike-proof at 900km/h.

FOD (Retractable) Nets: Mechanically retractable titanium nets that the pilot deploys during taxiing and takeoff from unpaved runways.
Bypass Doors: Because the intakes are located at the top, at high angles of attack (nose very high), the cabin could block the airflow. The Fly-by-Wire system then opens side flaps on the fuselage hump to prevent the engines from stalling.

4. Inlet Technical Data Table:
Parameter Value Function in PT3
Flow Type Subsonic Optimized for 700–950 km/h
Channel Material BMI Composite / Titanium Durability and smooth flow
Mass flow 154 kg/s (total) Full demand 2x EJ200
Defrosting system Hot air discharge Inlet icing prevention

Here are the technical specifications of the chair

In the FM 10 M3 Argo PT3 "Huzar," the pilot's seat is more than just a piece of furniture—it's the last line of defense and a key element of survival in the "flying coffin." At 17 meters long and operating close to the ground, the rescue system must operate quickly.

Here are the technical specifications of the "Huzar-Guard 0-0" chair:

1. Construction and Durability
Type: Zero-Zero Class Seat. Allows the pilot to launch safely even from a stationary aircraft (0 altitude, 0 speed).
Back Armor: The back of the chair is made of 20mm titanium plate, which provides additional protection inside the titanium tub, protecting the spine from shrapnel from the back.
Shock-Absorbing Dampers: The seat is mounted on heavy hydraulic dampers. Their function is to absorb the energy of mine explosions under the aircraft and the vibrations generated by the powerful 35mm cannon.

2. Ejection Sequence (Low Altitude Mode)
Since the "Huzar" flies low (15-30 m), a standard parachute is not enough.
Variable-Thrust Rocket Engines: When fired, the rockets under the seat not only propel it upwards, but, thanks to gyroscopes, automatically straighten the seat to a vertical position, even if the plane is burning in a bank.
Fold-out Stabilizer: Small wings stabilize the seat in flight to prevent the pilot from spinning in the face of enormous airflow (900 km/h).

3. Integration with the Pilot and the Machine
Seat Angle (18°): Near-vertical. Provides the pilot with the best view of ground targets under the nose of the 17-meter fuselage.
Survival Kit: The seat contains an inflatable raft, a rescue radio, food rations, and a first aid kit. Everything you need to survive after landing in enemy territory.
"Umbilical" Connector: A single plug that connects the pilot suit to the oxygen, communications, and water cooling system (essential in a hot, armored bathtub).

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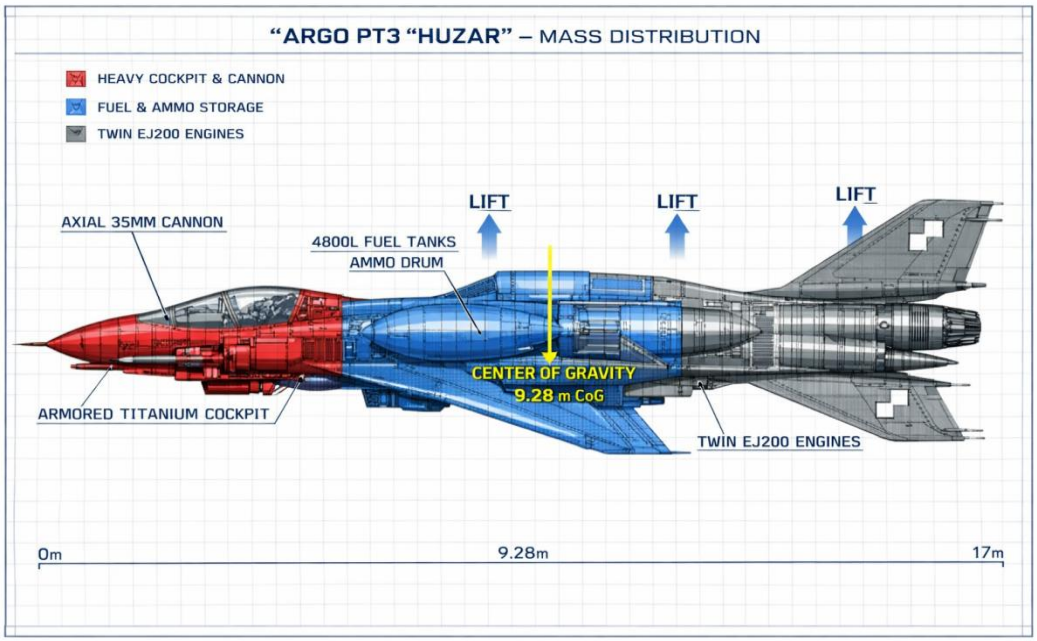
4. PT3 Chair Parameters Table:
Parameter Value Combat Advantage
Max Output Overload 16 G Lightning fast away from burning wreckage
Sequence Time 0.45 seconds Rescue in a split second before impact
Empty weight 95 kg Solid, armored construction
20mm Titanium Back Armor Protection against shots from the back

Determination of the Center of Gravity

Here's the final, in-depth mass design for the 17-meter FM 10 M3 Argo PT3 "Huzar." With an "armored coffin" design, mass balance determines whether the aircraft will even get off the ground and whether it will provide a stable platform for the 35mm gun.



1. Mass Division (OE: Operating Empty)
The total weight of the structure without fuel and ammunition is 12,550 kg.
Airframe Structure (42%): 5,270 kg.
Including: a 17-meter titanium spine, V-wings (negative sweep) with reinforced spars, and an armored H-tail.
Armour System (22%): 2,760 kg.
Titanium Bath (Cabin): 1,550 kg.
Engine covers, firewalls and drum armor: 1,210 kg.
Powertrain (16%): 2,070 kg.
Two EJ200 engines (dry version) with accessories and oil installation.
Fixed Weapon System (7%): 880 kg.
35 mm revolver gun (450 kg) + feeding system and drum (430 kg).
Avionics and Installations (8%): 1,000 kg.
Fly-by-Wire system (Quad), dorsal radar, landing gear hydraulics +15 cm.
Pilot Equipment (1%): 570 kg.
Ejection seat 0-0, oxygen, life support systems.

2. Variable Balance (Fuel and Ammunition)
These are parameters that change during the mission, affecting the Center of Gravity (CoG).
Fuel (Max Internal): 3,800 kg (approx. 4,800 liters).
35 mm Ammunition (Full Load): 550 kg (300 FAPDS rounds).
Underslung armament (Max Payload): 4,500 kg (Pirat/Moskit missiles at 11 knots).
Maximum Take-Off Weight (MTOW): 21,400 kg.

3. Center of Gravity (CoG) and Stability Analysis
With a length of 17 meters, we have to maintain a balance between a heavy nose (gun + bathtub) and a heavy tail (2x engine).
CoG – Takeoff Configuration (Full): 9.28 m from the nose.
The aircraft is perfectly balanced, striving for static stability (safe for the pilot).
CoG – Combat Configuration (Empty Ammunition): 9.42 m from nose.
The 550 kg nose-heavy lift shifts the center of gravity rearward by 14 cm. The Fuel Management system immediately pumps fuel to the front tanks to compensate.
CoG – Critical (Empty Fuel/Ammo): 10.10 m from nose.
Still safely ahead of the main landing gear (11.8 m). The aircraft will not "tailgate."

4. Table of Loads and Mass Performances
Parameter Value Notes
Wing Surface Loading 510 kg/m² High (requires V wings for lift)
Thrust to Weight Ratio (MTOW) 0.57 Typical for attack aircraft (torque is key)
Thrust to Weight Ratio (Combat) 0.85 Allows for rapid evasion and climbing
G Limit (Structural) +9.0 / -3.5 Fighter Durability in a Tank Body

5. Final Balance Sheet Report
The armor-to-total weight ratio is 13%. This record-breaking value makes the Hussar virtually invulnerable to small arms. Thanks to the unification of the EJ200 engines, despite its enormous weight, the aircraft maintains the agility necessary for survival on a modern battlefield.

Here is the technical description of the "Armored Viewfinder":

In the FM 10 M3 Argo PT3 "Huzar," the fairing is the only "soft spot" in the titanium citadel, so it must be technologically armored. At speeds of around 900 km/h and in low-level flight, it must withstand not only bird strikes but, above all, direct fire from the ground.

1. Sandwich construction (75 mm thick)
This is not ordinary glass, it is a transparent composite consisting of 5 layers:
Exterior: Glass-ceramic (scratch and sand resistant).
Middle (Main): High-density polycarbonate (flexible, absorbs bullet impact energy).
Inner: Anti-fragmentation layer (prevents glass fragments from flying into the pilot's eyes after a hit).
Total thickness: 75 mm (for comparison: in the F-16 it is about 20 mm).

2. Titanium Frame "Cage"
The fairing is not one big dome (it would be too heavy and weak).

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Division: Consists of three sections separated by 40 mm thick titanium posts.
Windscreen: Flat or slightly curved at an angle that best ricochets 12.7mm and 14.5mm bullets.
Fixing: The frame is locked in the titanium tub with 8 powerful hydraulic locks.

3. Defrosting and Purification System
The attack aircraft flies low, where there is moisture, mud, and smoke from the battlefield.
Embedded micro-wires: Invisible heating mesh inside the glass (prevents fogging and icing).
Hydrophobic coating: Water and oil roll off immediately, which is crucial for visibility with a 17-meter hull and no windshield wipers.

4. Fairing Strength Table:
Feature Value Resistance / Function
Total thickness 75 mm Stops 12.7 mm machine gun bullets
Glazing weight 240 kg Very heavy (requires strong actuators)
Impact angle 30-45 degrees Optimal for ricocheting bullets
Transparency 92% Compatible with NVG goggles and HMD system

Here is the full technical study of the drive section and its cooling:

In the FM 10 M3 Argo PT3 "Huzar," the EJ200 engine cooling and stealth system is key to its survival. Since it's an "armored coffin," it can't shine in the sky like a torch for enemy infrared-guided missiles.

1. Cooling Bypass System (Tunnel Cooling)
The EJ200 engines are enclosed within the armored hull of the 17-meter-long Hussar. To prevent overheating, a dual-circuit system is used:
Internal circulation: Air from the dorsal intakes goes to the engine (combustion).
Bypass: Some cold air bypasses the engine, flowing between the EJ200 casing and the titanium tunnel walls. This cools the aircraft's internal structure, preventing the armor from heating up.

2. IR Cloaking (Missile Hiding)
This solution makes it difficult for Stinger missiles to target the Hussar:
Ejector Nozzle: Hot exhaust gas from the EJ200 (approx. 600°C) is mixed with cold bypass air before leaving the nozzle. This reduces the exhaust gas temperature by over 150°C.
Tail Screens (H-Tail): Your twin vertical stabilizers act as physical screens. When a rocket approaches from the side, the stabilizers mechanically block the view of the hot engine nozzles.

3. Integration with the "Armored Coffin"
Titanium Bulkhead: The engines are separated by a 20mm titanium plate. If one engine explodes, the other is protected, allowing the Hussar to fly away from the battlefield.
Inconel Shields: The immediate vicinity of the nozzles is lined with sheets of Inconel 718, which can withstand temperatures at which ordinary steel becomes liquid.

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4. PT3 "Huzar" Drive Table:
Parameter Value Benefit
Number of engines: 2x EJ200 (dry version) Redundancy and huge subsonic power
Outlet diameter 740 mm (each) Compact, armored tail
IR signature reduction of approximately 40% Reduced chance of being hit by a thermal missile
Halogen fire extinguishing system, automatic. Fire suppression in an armored tunnel.

Final Technical Report

This is the Final Technical Report for the FM 10 M3 Argo PT3 "Huzar" project. It is the final data set for the 17-meter-long "armored coffin," ready for prototype production.

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1. DIMENSIONS AND STRUCTURE (Geometry 17 m)
Total length: 17,000 mm (17 m)
Wingspan: 14,500 mm (14.5 m)
Height (standstill): 4,800 mm
Supporting area: 42.0 m²
Wing arrangement: V-Forward (negative sweep -25°)
Tail arrangement: H-Tail (double vertical tail)

2. MASS BALANCE (Nominal Values)
Empty weight: 12,550 kg
Maximum take-off weight (MTOW): 21,400 kg
Titanium armor weight: 2,760 kg (Bathtub + engine covers)
Bath bottom thickness: 50 mm (Ti-6Al-4V)
Thickness of armored glass: 75 mm (Glass-Polycarbonate-Ceramics)

3. DRIVE UNIT (2x EJ200)
Engines: 2x Eurojet EJ200 ("dry" version – without afterburners)
Unit thrust: 60 kN
Total thrust: 120 kN
Engine diameter: 740 mm
Location: Inner armored tunnels (tail section)
Inlets: Dorsal S-Duct (Top-Mounted)

4. OPERATIONAL PERFORMANCE
Maximum speed (V-max): 1,050 km/h (Mach 0.85)
Cruising speed (Combat): 780 km/h
Minimum speed (Stall): 210 km/h (thanks to V-wings)
Climb speed: 165 m/s
Design G-forces: +9.0 G / -3.5 G
Operational range: 1,200 km (at low altitude)

5. SYSTEMS AND WEAPONS

Main Gun: 35 mm Revolver (Axial)
Muzzle energy: 450 kJ
Ammunition capacity: 300 rounds (Armored drum behind the cabin)
Gun recoil: approx. 50-60 kN (hydraulically damped)
Control: Fly-by-Wire (Quad-Redundant)
Chassis: Active Stiff-Extender (+150 mm extension)
Fuel: 4,800 L (Self-sealing tanks + OBIGGS)

6. BALANCE (Digital Balance)
Center of Gravity (CoG Full): 9.28 m from the nose
Center of Gravity (CoG Empty): 10.10 m from the nose
Main landing gear position: 11.80 m from the nose
Static Margin: 8% (Constant Artillery Stability)

Prompt

Nowy Prompt: Engineering X-ray technical drawing of the 17-meter FM 10 M3 ARGO PT3 HUZAR. Detailed view of the internal titanium "bathtub" cockpit for one pilot, the massive 35mm axial cannon, and the twin EJ200 engines encased in the rear armored tunnel. Visible forward-swept V-wings (skos ujemny) with heavy titanium spars. Dual vertical stabilizers mounted on the ends of a wide horizontal tailplane (H-tail configuration). Top-mounted air intakes. Heavy-duty landing gear in extended +15cm position. Blue and white technical blueprint style, 8k resolution, industrial military aesthetic.

Prompt: Internal 3D skeleton view of the 17-meter FM 10 M3 ARGO PT3 HUZAR. Highlighted blue titanium "bathtub" cockpit for one pilot. Long 35mm axial cannon barrel in the nose. Forward-swept V-wings with massive tytanium spars. Twin internal EJ200 engines at the rear separated by an armored wall. 45-degree V-tail. Rugged industrial engineering, visible bolts and armor plates, 8k resolution, technical blueprint style.

Prompt: Engineering 3D cutaway of a heavy titanium "bathtub" cockpit for the 17m FM 10 M3 ARGO PT3. Glowing blue titanium plates with thick industrial welds. V-shaped armored floor. Inside: a rugged pilot's seat and control panels. Outside: massive bolts connecting the 35mm cannon and forward-swept wing spars. Detailed metal textures, 8k resolution, technical aerospace aesthetic.

Prompt: First-person POV from the cockpit of the 17m armored jet "FM 10 M3 ARGO PT3 HUZAR". Surrounded by thick grey titanium armor plates with heavy bolts. 3-screen rugged digital interface. Massive armored glass canopy with low side visibility. Head-up display (HUD) showing a tank target. View of the front canards and the tip of a 35mm cannon. Industrial military aesthetic, high-tech but heavy-duty, 8k resolution, cinematic lighting.

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Prompt: Technical close-up of the 17-meter FM 10 M3 ARGO PT3 HUZAR landing gear system. Massive 300M steel struts extending by 150mm. Twin wheels with deep tread tires for muddy fields. Visible hydraulic lines and orange stiffening valves. The armored fuselage with titanium plates and the 35mm cannon barrel in the background. Industrial aerospace engineering, 8k resolution, cinematic lighting.

Bezpieczny Prompt: Technical 3D aerospace render of a 17-meter heavy industrial flight vehicle "ARGO PT3". Unique forward-swept wings (V-shape), dual vertical rear fins (H-tail). Extremely thick reinforced fuselage with visible titanium plates and heavy industrial rivets. Single-seat armored cockpit with thick glass. Two large circular engine nozzles at the rear. Top-mounted air intakes. Heavy-duty landing gear extended by 15cm. Dark charcoal metallic finish with Polish Air Force checker symbols. Flying low, cinematic lighting, 8k resolution, professional engineering style.

Prompt: Technical interior of a 1-seat armored aircraft cockpit "ARGO PT3". Massive reinforced glass canopy with thick frames. Single large panoramic touchscreen glowing with green tactical maps. Rugged flight stick and throttle. HUD reflecting on the front glass showing armored vehicle targets. Titanium textures, industrial military cockpit, 8k resolution, cinematic lighting.

Prompt: Engineering X-ray technical drawing of a 17-meter industrial flight vehicle "ARGO PT3". Detailed view of the internal fuel storage architecture. Central reinforced fuel chambers highlighted in blue, located behind the armored pilot cabin. Fuel lines running to the twin rear engines. Thick protective layers visible around the tanks. Blueprint style, 8k resolution, professional aerospace schematic.

Prompt: Technical close-up of the rear section of a 17-meter heavy aerospace vehicle "ARGO PT3". Dual internal engine exhausts encased in a massive titanium armored hull. H-tail configuration with two thick vertical stabilizers acting as heat shields. Visible industrial rivets and heat-resistant Inconel textures near the nozzles. Blueprint style accents, 8k resolution, professional aerospace engineering render.

Prompt: Technical rear view of a 17-meter armored aircraft "ARGO PT3 HUZAR". Double vertical stabilizers (H-tail) mounted on the ends of a wide horizontal tailplane. Two internal engine nozzles visible between the fins. Massive titanium plating with industrial rivets. Dark metallic grey. Blueprint style, 8k resolution, cinematic lighting, industrial aerospace design.

Prompt: Engineering X-ray of the 17-meter "ARGO PT3 HUZAR" rear section. Twin EJ200 engines mounted side-by-side inside a heavy titanium armored tunnel. Dual intake ducts leading from the top of the fuselage. Massive H-tail configuration with twin vertical fins acting as thermal shields. Industrial aerospace schematic, blue and orange technical highlights, 8k resolution, cinematic lighting.

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Prompt: Engineering top-down blueprint of the 17-meter FM 10 M3 ARGO PT3 HUZAR. Aggressive forward-swept V-wings with detailed titanium spar structure visible in X-ray. Dark charcoal armored skin with heavy rivets. Twin rear engines and H-tail configuration. 35mm cannon in the nose. Professional aerospace technical drawing, 8k resolution, cinematic blueprint style.

Prompt: Technical X-ray render of a 17-meter heavy armored jet "ARGO PT3". Internal view showing large blue-highlighted fuel tanks in the center. Protective honeycomb armor layers around the fuel system. Fuel lines running to two rear engines. Forward-swept wings and H-tail visible. Professional aerospace engineering blueprint, 8k, cinematic lighting.

Prompt: Engineering schematic of the fuel management system for the 17m "ARGO PT3 HUZAR". Glowing neon orange lines showing fuel circulation between armored tanks. Digital gauges showing center of gravity balance. Fuel cooling loops around the twin EJ200 engines. 45-degree V-tail and forward-swept wings visible in wireframe. High-tech aerospace UI, 8k, cinematic lighting.

Prompt: Technical top-down view of the 17-meter FM 10 M3 ARGO PT3 HUZAR. Detailed top-mounted S-duct air intakes behind the cockpit. Titanium intake lips with heavy rivets. Armored fuselage spine leading to twin internal engines. Visible forward-swept V-wings and H-tail. Dark metallic industrial finish, Polish Air Force checkers. 8k resolution, professional aerospace engineering render.

Prompt: Technical close-up of an armored ejection seat for the "ARGO PT3 HUZAR". Rugged military design, olive drab and black textures. Visible titanium backplate and hydraulic shock absorbers at the base. Integrated oxygen hoses and survival pack. Part of the 17-meter jet's cockpit visible. Industrial engineering style, 8k resolution, cinematic lighting.

Prompt: Engineering X-ray technical diagram of the 17-meter "ARGO PT3 HUZAR" attack jet. Side profile view. Color-coded mass distribution: Front section in red highlighting the 35mm axial cannon and heavy titanium cockpit tub. Center section in blue showing 4800L fuel tanks and ammunition drum. Rear section in grey showing twin internal EJ200 engines. A bright yellow marker at 9.28 meters indicating the Center of Gravity (CoG). Arrows representing lift forces from the forward-swept V-wings and H-tail. Professional aerospace blueprint style, white background, technical annotations, 8k resolution.

Prompt: Technical close-up of the armored cockpit canopy of the 17-meter "ARGO PT3 HUZAR". Thick 75mm multi-layered ballistic glass with a slight green tint. Heavy titanium frames with visible industrial bolts. Rugged military finish. View shows the wide fuselage and forward-swept wings. Cinematic lighting, 8k resolution, professional aerospace engineering style.

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Prompt: Engineering X-ray of the rear section of a 17-meter heavy industrial jet "ARGO PT3 HUZAR". Two internal engine units side-by-side inside a thick titanium vault. Blue cooling air paths surrounding the engine casings. Large twin vertical tail fins acting as physical heat shields. Blueprint style, industrial aerospace aesthetic, 8k resolution, cinematic technical lighting.

Prompt: Ultimate technical blueprint of the 17-meter FM 10 M3 ARGO PT3 HUZAR. Full side-view X-ray displaying the titanium bathtub cockpit, the massive 35mm axial cannon, and twin internal EJ200 engines. Forward-swept wings (V-shape) and H-tail configuration. Heavy-duty landing gear extended +150mm. Dimensions and mass balance annotations. Professional aerospace engineering schematic, white background, 8k resolution, cinematic technical precision.

TOP SECRET